

Amendments To The Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-24. (Canceled)

25. (New) Freeze-drying apparatus for foodstuffs and medicaments, which comprises: a main body part constructed by assembling an upright cylindrical tube for freezing liquid material feed to be dried, onto an inner wall surface of said cylindrical tube; and a jacket provided on and around the outer periphery of said tube in a substantially concentric cylindrical shape to permit a heat medium to circulate in the jacket around said outer periphery of said cylindrical tube, wherein said heat medium does not enter said tube,

a duct communicating to a vacuum exhaust system, which is connected to the upper end side of said tube of said main body part, either directly or through a chamber,

an inlet port for introducing said liquid material feed to be dried onto the inner cavity of said tube, said inlet port being connected to a downstream side of a tube passageway for feeding said liquid material, within said duct or said chamber, and above said tube; and

an extended wall projecting above a liquid surface of said heat medium is disposed on the upper end side of the cylindrical wall of said tube, to enable said liquid material ejected from said inlet port onto the inner surface of said extended wall to eject from said inlet port against the inner surface of said extended wall.

26. (New) Freeze-drying apparatus for foodstuffs and medicaments, according to claim 25, wherein said main body part of said freeze-drying apparatus is constructed by assembling said upright cylindrical tube for freezing said liquid material feed to be dried onto the inner wall surface of said cylindrical tube, and the jacket provided on and around the outer periphery of said tube in a substantially concentric cylindrical shape for circulating the liquid heat medium within the interior of said jacket,

said main body part of the freeze-drying apparatus being connected in a plurality of parallel rows, and mounted on a machine frame,

ducts communicating to said vacuum exhaust system being connected, either directly or through the chamber, to the upper end side of said respective upright cylindrical tubes of said main bodies arranged in parallel rows, the lower end side of each of the respective upright cylindrical tubes being

provided with opening-and-closing valves, or with a recovery chamber equipped with valve on the bottom part thereof; and

the inlet port for introducing liquid material feed into the inner cavity of said each tube by being connected to the downstream side of the tube passage for feeding the liquid material.

27. (New) Freeze-drying apparatus for foodstuffs and medicaments, according to claim 25, wherein said main body part of the freeze-drying apparatus is constructed by assembling the upright cylindrical tube for freezing said liquid material feed onto the inner wall surface of the cylindrical tube, and the jacket provided on and around the outer periphery of said tube in a substantially concentric shape for circulating the liquid heat medium in the interior of said jacket,

said main body part of the freeze-drying apparatus being connected in a plurality of parallel rows and supportively held on a machine frame,

the upper end side of said respective upright cylindrical tubes of the main body part being made open to the duct or the chamber communicating to said vacuum exhaust system supportively held on the machine frame, while the lower end side of said tubes being each connected to the opening-and-

closing valve or to the recovery chamber equipped with the valve on the bottom part thereof, and further

said inlet port for introducing the liquid material feed into the inner cavity of said each upright cylindrical tube, said inlet port being disposed within said chamber connected to said duct or the chamber joined to said duct.

28. (New) Freeze-drying apparatus for foodstuffs and medicaments, according to claim 25, wherein said main body part of the freeze-drying apparatus constructed by assembling the upright cylindrical tube for freezing the liquid material as fed onto the inner surface of said cylindrical wall, and the jacket provided on and around the outer periphery of said tube in a substantially concentric shape on the outer periphery of the tube to permit the liquid heat medium to circulate in the interior of said jacket, is connected in a plurality of parallel rows, and supportively held on a machine frame,

the upper end side of said respective upright cylindrical tubes of the main body parts is made communicatively connected to the duct communicating to said vacuum exhaust system through the freely opening-and-closing valves.

29. (New) Freeze-drying apparatus for foodstuffs and medicaments, according to claim 25, wherein said main body

part of the freeze-drying apparatus constructed by assembling the upright cylindrical tube for freezing the liquid material feed to be dried onto the inner surface of the cylindrical wall, and the jacket provided on and around the outer periphery of said tube in a substantially concentric shape to cause the liquid heat medium to circulate in the interior of said jacket, is connected in a plurality of parallel rows, and supportively held on a machine frame,

said jacket to be provided on the outer periphery of said respective upright cylindrical tubes of said main body parts arranged in a plurality of parallel rows being commonly used with a heater, a refrigerator, and a heat-exchanger for the liquid heat medium to be circulated in and through said respective jackets of the main body parts as connected in parallel without entering said tube, by a tube passageway guiding said heat medium to be circulated in and through said jacket, in parallel with a tube passageway of the heat-exchanger and the heater to be cooled by the refrigerator.

30. (New) Freeze-drying apparatus for foodstuffs and medicaments, according to claim 25, wherein said upright cylindrical tube for freezing the liquid material feed onto the inner surface of the cylindrical tube is provided with a funnel-shaped inclined wall with a diameter thereof being

gradually reduced in the downward direction, at a position projecting below said jacket, which surrounds the outer periphery of said tube in an outer cylindrical shape, and circulates the liquid heat medium in the interior of said jacket, said inclined wall being disposed at a position below the lower edge so that the diameter-reduced portion at the lower end side comes to a position below the lower edge of the liquid material feed to be frozen in the cylindrical shape on the inner wall surface of said tube.

31. (New) Freeze-drying apparatus for foodstuffs and medicaments, according to claim 25, wherein said upright cylindrical tube for freezing the liquid material to be dried onto the inner surface of said tube is provided with a support member, either fixedly or movably into and out of the inner cavity of said cylindrical tube, for supporting the lower edge of the layer of said liquid material frozen onto the inner wall surface of said tube by being protruded from the inner surface of said tube toward a position occupying beneath the lower edge of the layer of said liquid material frozen in the cylindrical form onto the inner wall surface of said tube, on said inner surface at a position protruding downward of the jacket which surrounds the outer periphery of said tube, and causes the liquid heat medium to circulate in and through said jacket.